# Facing DTV projects based on HbbTV 2.0.1 and Freeview Play standards?

## Seraphic and Fluendo provide you with a turnkey solution

Fluendo, the influential multimedia provider of GStreamer based solutions, has worked alongside the global leader of digital TV browser solution provider SERAPHIC, to develop a fully compliant HbbTV 2.0.1 and Freeview Play solution, through the integration of SERAPHIC's TV browser and the Fluendo SDK.

Hybrid broadcast broadband TV (or "HbbTV") is a global initiative aimed at harmonizing the broadcast and broadband delivery of entertainment services to consumers, through connected TVs, set-top boxes and multiscreen devices. By leveraging existing specifications from other standards including OIPF, CEA, DVB, MPEG-DASH and W3C, HbbTV is developed to improve the video user experience for consumers by enabling innovative, interactive services over broadcast and broadband networks.

Freeview Play, the subscription-free catch-up and on-demand TV service, offers a mix of linear channels and on-demand programming, giving viewers access to content from BBC iPlayer, the ITV Hub, All 4, My5 and UKTV Play. Freeview Play is on track to becoming the next generation platform that viewers access TV!

## Why Sraf?

Sraf HbbTV is the world leading HbbTV solution,
which is compliant with the latest HbbTV 2 specification.

Built on Blinked based Sraf HTML5 Browser engine , Sraf HbbTV is a market-proven, platform-independent software solution that enables device manufactures,SoC vendors, middleware providers and operators, to quickly launch or upgrade HbbTV capable devices and services with affordable cost.

Sraf HbbTV provides a flexible architecture to deliver high performance and rapid porting on various SoC platforms. Even more, it has been already preintegrated with the major DTV/STB SoCs and can be used to develop products on turnkey solutions with zero porting and integration effort. Being an advanced hybrid platform, it not only delivers the latest HbbTV compliance but also supports a wide range of popular catch-up TV services and portal services.

Sraf HbbTV solution is ready for certification on reference platforms and compliant with the latest test suite from HbbTV Association, with the industry leading Ligada Test framework.

## Why Fluendo SDK?

The Fluendo SDK enables the cross platform development of multimedia playback and recording applications based on GStreamer.

Our SDK includes a complete set of tools (playback, streaming, audio/video codecs, formats, interfaces) that completely hide GStreamer's programming complexity through a clear and easy-to-use API.

The Fluendo SDK takes care of the complete multimedia pipeline, from media retrieval (downloading, streaming, file reading) all the way to rendering, including all intermediate steps like demuxing, decoding, colorspace conversions, etc., guaranteeing an optimal processing. Regardless of the origin of the file (Internet or locally stored), all major file formats (containers) and codecs are supported, even the ones related with Adaptive Bitrate Streaming technologies: MPEG-DASH, Apple HLS, Microsoft Smooth Streaming.

The Fluendo SDK is written in C and it is perfectly integrated with the Sraf browser via a customized Media Adaptor. Our solution runs on the CPU, so it does not require special conditions to run on any hardware, other than compiling for the appropriate processor. However, there are a few places where special hardware can be used if available: Hardware-accelerated video decoding, video rendering and SPDIF support are some examples.

Figure 1. ZDF mediathek powered by Sraf HTML5 Browser
Copyright ZDF content: ZDF mediathek

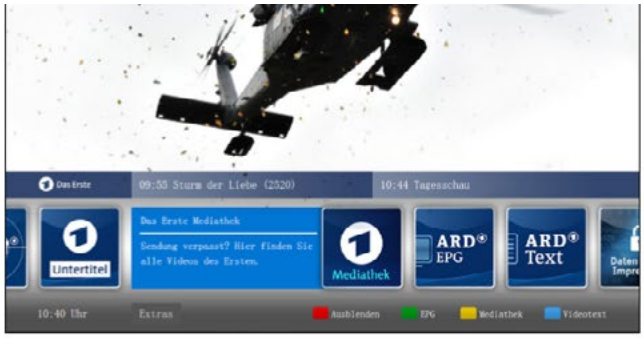



Figure 2. Das Erste powered by Sraf HTML5 Browser
Copyright Das Erste content: Das Erste

# Specification

## Product Highlights

Fully functional HbbTV Application Manager Application Management Integration APIs for Broadcast Application (AIT), Broadcast Independent Application, XML AIT, Key Events, Teletext and etc
CE-HTML Object Video Leverages Media -Player Adaptor as HTML5
All Adaptors and Integration APIs are Based on IPC to Avoid Additional Efforts

CSS3 (3D Transforms, CSS3 Animations & Transitions, CSS3 Media Queries and Selectors,CSS3 Opacity, CSS3 Outline, CSS3 Background)
CSS1, CSS2.1
XHTML 1.1
Image support: GIF, JPEG, PNG, SVG
Extensions of CE-HTML profiling
New URI scheme dvb:// support

Object Factory
Parental Rating and Parental Control
Programme
Metadata
Media Synchronization Scheduled Recording
Search manager
Scheduled Content and Hybrid Tuner TTML based Subtitle
Video Broadcast
Other HbbTV OIPF APIs

## HbbTV 2 Highlights

Ad Insertion
Companion Screen
Clear key encryption
Encrypted Media Extension
Media Synchronization
TTML based Subtitle
Web Audio

## Standard Compliance

ETSI TS 102 796 v1.1.1
ETSI TS 102 796 v1.2.1
ETSI TS 102 796 v1.3.1
CEA-2014-A HbbTV
JavaScript APIs as defined in OIPF DAE v2.3

## JavaScript Extensions

Application Management
Audio/Video Component
Audio/Video Control Object
Companion Screen
Capabilities C
onfiguration and Settings
Channel and Channel List
Download Manager
Download Trigger
DRM Agent
DSM-CC Contents Access
DSM-CC Stream Event Listener
Gateway Information
HTML5 Media Elements

## Supported CPUs

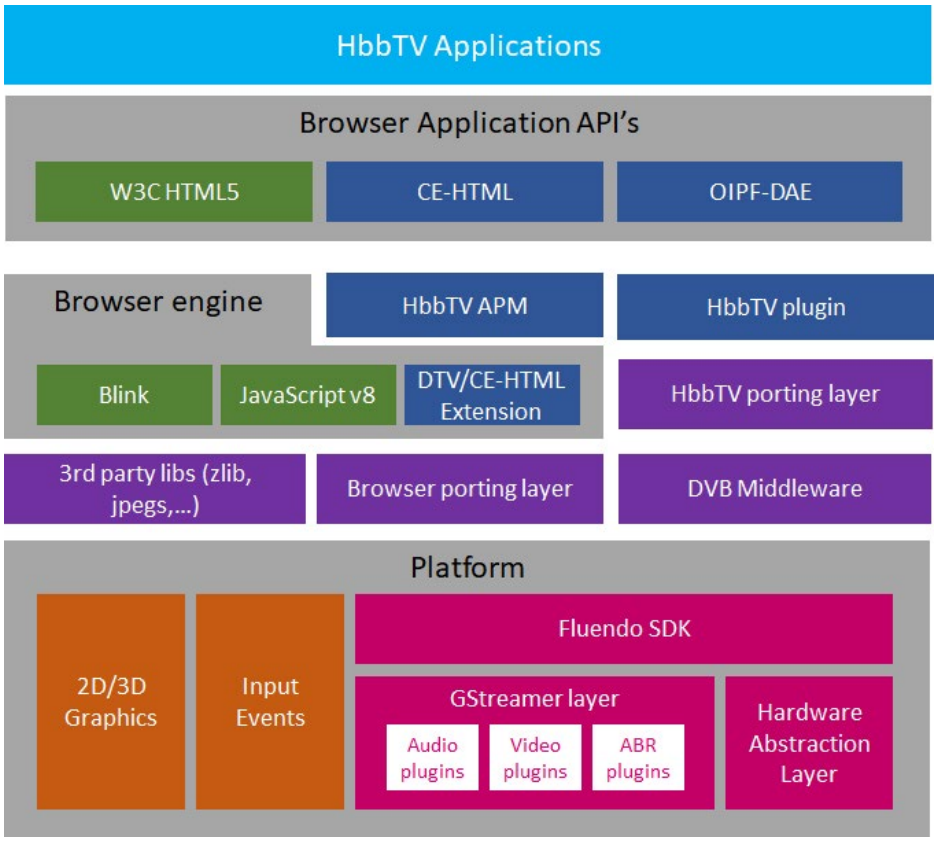
ARM
MIPS
x86

## Standard Compliance

ROM: < 50MB (ARM Linux)
RAM:<128MB

## Documents

Sraf HTML5 Browser Integration Guide
Sraf HbbTV Adaptor API Specification
Sraf HbbTV AMP Integration API Specification




## Supported Formats

**Video Decoders**
AVC (H.264), HEVC (H.265), AV1, MPEG4 part 2, MPEG2, WMV (7, 8, 9 and VC1), Divx3, Hardware accelerated video decoder (H.264, MPEG2, MPEG4, VC1 depending on the hardware/API: DXVA2, VDPAU, VAAPI, XvBA, VDA, VT, QuickSync)

**Audio Decoders**
AAC/HE-AAC, AC3/EAC3, MP3, WMA (7, 8, 9, 10, Pro, Lossless and Speech), iLBC, LPCM

**Streaming Protocols**
MPEG-DASH, HTTP Live Streaming, RTSP Streaming, Smooth Streaming, Progressive Download

Figure 3. Sraf HTML5 Browser HbbTV Edition Module Diagram and the Fluendo SDK

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